Some Notable Early Faculty Members

H.W. Barlow

Professor H.W. Barlow came to the University as an instructor in September 1932. He was a native of Cleveland, Ohio, and obtained his BS degree from Purdue and a MS in Aeronautical Engineering at Minnesota. Professor Barlow worked with John Akerman on designing and building racing airplanes for Colonel Roscoe Turner, holder of several long-distance speed records from New York to Los Angeles and back and from England to Australia as well as a famous pylon racer. One of the pylon racers designed at the University of Minnesota is in the National Aerospace Museum. This aircraft was designed to be neutrally stable in order to increase performance and was a very early example of an aircraft purposely designed for reduced static stability, a feature prevalent in most current high performance aircraft. Another aircraft designed by Barlow and Akerman was a streamlined single-seat land monoplane that was expected to have a top speed of 400 miles per hour. Barlow later joined the faculty at Texas A&M.

Jean Piccard

Dr. Jean Piccard was already a world famous balloonist when he came to the University in 1936. He taught courses in stratospheric flight while doing research and conducting many pioneering balloon flights. Dr. Jean Piccard and his wife, Dr. Jeanette Piccard, made their first stratospheric flight in October 1934, in Detroit. Before coming to Minnesota, they were associated with the Bartol Research Foundation of the Franklin Institute. At that time, they were foremost among the five or six persons with scientific knowledge of the stratosphere. Jean's twin brother, Dr. Auguste Piccard, was also a stratospheric pioneer. Together the brothers designed the balloons and their gondolas for the first stratospheric flights attempted, and together they conducted those flights in Switzerland. Jeanette Piccard was the pilot of the famous Piccard balloon expeditions. She was the first licensed woman balloonist in the world and the first woman to ascend into the stratosphere.

One of Dr. Jean Piccard's first projects at the University was constructing an unmanned hydrogen-filled transparent cellophane balloon for ascents 10 to 14 miles into the stratosphere. The balloon was successfully flown on June 24, 1936. Three aeronautical engineering students-Harold Hatlestad of Minneapolis, who built the radio equipment for the flight, Robert Hatch of St. Paul, and Robert Silliman of Duluth-maintained radio contact with the balloon from the station on the roof of the University armory. Jean Barnhill was a graduate student who worked with Dr. Piccard and aeronautical engineering students Harold Larson and Lloyd Schumacher in cutting by hand the sixteen 33-foot long tapered gores that made up the 25-foot high balloon. The 'orange peel' gores were fastened together by a revolutionary product, inch-wide strips of cellophane covered with adhesive, called Scotch tape, developed by the Twin Cities' 3M Company. Jean Barnhill was the first woman to graduate from the University in Aeronautical Engineering, and was also a championship pilot in national air races. She married Robert Gilruth, another graduate of the Department. Robert Gilruth was later instrumental in development of swept back wind technology in the U.S. and played a key role in the U. S. Space Program as Director of the NASA Johnson Manned Space Flight Center during the Apollo program.

Rudolf Hermann

The Rosemount Aeronautical Lab (RAL) provided an important research facility that helped the Aeronautical Engineering Department attract the kind of faculty members capable of advancing the department as a research entity. By 1960, RAL housed a continuous-flow transonic tunnel, continuous-flow and blow-down supersonic tunnels, and a high temperature hypersonic wind tunnel. The facilities at RAL attracted some top researchers to the Aeronautical Engineering Department at the University of Minnesota. One of these was Dr. Rudolf Hermann.

Rudolf Hermann earned his Ph.D. in physics from the University of Leipzig in 1929 and in 1935, he completed his Doktor habilitation (Dr. habil.), the second doctorate required of all professorial candidates in Germany. Hermann's first engineering position was in the Department of Applied Mechanics and Thermodynamics at the University of Leipzig from 1929 to 1933. In 1934 he took over as head of the supersonic wind tunnel division at Aachen, a position he kept until 1937.

In 1935 the Luftwaffe Technical Office introduced Wernher von Braun, the German rocket pioneer, to Rudolf Hermann who was working at Aachen as an assistant professor in addition to holding his position in the wind tunnel center. Von Braun's group had difficulty with the aerodynamic design of missile fins and turned to Hermann and his facilities at Aachen.

Because of the significant role supersonic aerodynamics played in rocket design and the distance of the Aachen lab from Peenemünde, von Braun felt that the rocket group needed its own supersonic wind tunnel and its own supersonic specialist. Hermann joined the Peenemünde group in April 1937 as Director of the Supersonic Wind Tunnel Laboratory of the Army Rocket Experimental Station. The construction of two supersonic tunnels was Hermann's priority. The first tunnel was a 20-second, blow down tunnel with a 40-centimeter-wide test section and a maximum running speed of Mach 4.4. The second was an 18 x 18 centimeter continuous-flow tunnel with a maximum speed of Mach 3.1. The theoretical design of the De Laval nozzles used to accelerate the tunnel flows to supersonic velocities proved to be an extraordinarily complex task. Nevertheless, Hermann and his team perfected the designs for the testing facilities while providing novel methods for acquiring transonic and supersonic data, such as drop tests from an altitude of 7000 feet. Through these tests, Hermann and his staff gathered supersonic flight data on the aerodynamic design of the A-5, a redesigned A-3 rocket used to test guidance systems. The lessons learned from the study and testing of the A-5 were later incorporated into the design of the V-2 rocket. This experience gave Hermann the status of chief aerodynamicist for the V-2 rocket.

With the end of World War II, the Allied Powers sent representatives to occupied Germany to recruit the top scientists in a variety of fields for the benefit of science and weapons development at home. In the U.S., this operation was known as Project Paperclip. By the end of 1952, 544 German specialists were living and working in the United States because of Project Paperclip. As these scientists and engineers arrived in America, they were usually housed and put to work at military installations.

In 1945, Hermann was employed as a consultant with the Air Engineering Development Division at Wright Patterson Air Force Base in Dayton, Ohio. The American public was not told of the presence of German scientists and engineers working in the United States until early December of 1946. Newsweek magazine described the work of Hermann and his colleagues as follows: "As the war ended, [Dr. Rudolf Hermann] was building a 7,000-mile-an-hour wind tunnel in the Bavarian Alps. With six associates brought from Germany, Hermann is working on supersonic wind tunnels for the United States Army."

By 1948, some of the incoming Germans were being approved for work in American industry, and with that approval came essentially full freedom of choice. Scientists already in the United States were also being released for industry work. In fact, 516 of these German scientists and engineers and 1063 of their dependents obtained U. S. citizenship. Hermann was one of these.

In 1950, Hermann left Wright Air Force Base, and joined the faculty in the Department of Aeronautical Engineering at Minnesota. He brought knowledge and expertise in supersonic and hypersonic flight, subjects that were new to the curriculum. Hermann also taught mostly graduate level courses. The lack of graduate courses was a weak area in the Aeronautical Engineering department that was partially remedied by the addition of Hermann to the faculty.

Hermann served the University of Minnesota both as a teaching professor and researcher, much as he had in Germany. He and his family lived in one of the 25 staff houses on the grounds of RAL, where he was Technical Director of the Hypersonic Facilities. At RAL, Hermann conducted research on supersonic and hypersonic flow characteristics, rocket sleds, and ramjets, with much support and funding from the U. S. Air Force and Navy. Hermann was one of the top researchers in supersonic and hypersonic aerodynamics in the 1950s and 1960s.

In June 1962, Rudolf Hermann left the University of Minnesota to accept the position of Director of the newly founded aeronautical research laboratory at the University of Alabama in Huntsville, a neighboring facility to Marshall Spaceflight Center where Hermann's former collaborator from Peenemünde, Wernher von Braun, was in charge. During his time at Minnesota, he contributed to the Aeronautical Engineering program his knowledge and understanding of supersonic and hypersonic theory and an approach to engineering science at a time when the Institute of Technology was ready for change.

Helmut G. Heinrich

Dr. Helmut G. Heinrich was also one of the German scientists who came to America after the war as part of Project Paperclip. Educated at the Technical University of Stuttgart, "Doc" Heinrich, as his students and associates knew him, served as Chief of Aerodynamics at the Graf Zeppelin Institute in Germany during WW II. He was at Wright Airforce Base from 1946 until 1956 when he joined the faculty of the Aeronautical Engineering Department of the University of Minnesota. Professor Heinrich taught courses and conducted pioneering work on deployable aerodynamic deceleration devices, primarily parachutes. A number of undergraduate and graduate students worked on government contracts and grants under the direction of Dr. Heinrich. He invented the guide-surface parachute and several related devices that significantly improved parachute construction and performance. Heinrich developed supersonic parachutes that were considered for use in the Apollo program and his contributions to parachute systems were used for soft-landing scientific probes on Venus and Mars.

Dr. Heinrich died of a heart attack on March 7, 1979 in Houston where he had just received the first AIAA Aerodynamic Deceleration Systems Award. He was a fellow of the AIAA, a Fellow of the RAES, and a charter member of the AIAA Committee on Aerodynamic Deceleration Systems formed in 1965.

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